www.SmartEnergyDecisions.com

Insights from the December 2021 Edition

SMART ENERGY DECISIONS
RENEWABLE ENERGY FORUM

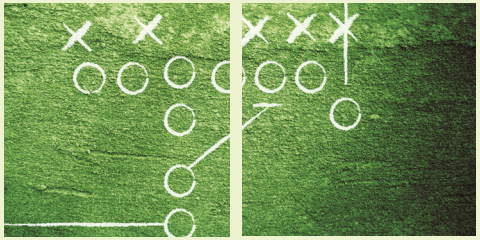











December 6–8, 2021

Together again... and ready to help you succeed

Smart Energy Decisions opened its 8th Renewable Energy Forum with the Pacific Crest Drum and Bugle Corps serenading attendees with "Happy" to celebrate our return to live events. From December 6–8, 2021, attendees at the Hyatt Regency Huntington Beach, CA, joined in educational sessions, one-to-one meetings between buyers and suppliers, and networking events, bringing the community back together in person to explore "Collaborating for a Net Zero Future."

This *Insights* report, part of our continuing series, offers excerpts from each general session to give you a taste of the thought-provoking content, as well as the spirit of collaboration in evidence throughout the event. We're extremely grateful for the ongoing support of the SED Advisory Board, as well as our speakers, sponsors, and of course, our buyer attendees, in making this event a success.

Following the success of our 9th Renewable Energy Forum this past June and the successful launch of the Net Zero Forum in September, we are proud to announce that Smart Energy Decisions is now part of Diversified Communications, a global media company. SED will complement Diversified's existing Clean Energy portfolio already serving the solar, energy storage, and EV charging infrastructure markets. Calling "Diversified is the best new home for our team and an environment that will help SED achieve its potential, the best is yet to come for SED" , said John Failla, SED's Founder.

With new opportunities and, yes, energy, the SED team looks forward to the 10th Renewable Energy Forum, set for December 6-8, 2022 as we return to the Hyatt Regency Huntington Beach. Our community of buyers and suppliers will assemble to experience this unique and proven platform where you can learn, network, and conduct business to accomplish your renewable energy goals. Buyers can click here for an application to attend. Suppliers can click here to explore sponsorship opportunities.

We look forward to seeing you at a Smart Energy Decisions event soon!

Cordially,

Debra Chanil

Director of Research & Content
debra@smartenergydecisions.com

SMART ENERGY DECISIONS
RENEWABLE ENERGY FORUM

December 2021

TABLE OF CONTENTS

Editor's Note: Together Again 02

Opening Keynote: Microsoft and the Art of the Possible 04

Supplier Keynote: The Infinite Game—Managing Cost, Risk, and Carbon 07

Q&A: Creating Your Scope 3 Emissions Playbook 10

Keynote: The Next Chapter—Reflections from an Industry Leader 13

Panel: How to Get Your PPA Deal Done in a Seller's Market 16

Going Global: Advancing 100% Renewable Energy in Global Organizations 19

Closing Kenote: The Electrification of General Motors 22

Together Again—Renewable Energy Forum 2021

Opening Keynote: Microsoft and the Art of the Possible

Brian Janous,
General Manager, Energy and Renewables, Microsoft

Opening Keynote: Microsoft and the Art of the Possible

Brian Janous reflects on the change in Microsoft's corporate DNA that has moved the company to the forefront of the sustainability movement, including a commitment to source 100% renewable energy by 2025, be carbon negative by 2030, remove all of its historical carbon emissions emitted directly or through electrical consumption by 2050, and invest $1 billion in a climate innovation fund.

We were so slow in the beginning. We moved from skepticism and resistance to suddenly, "Hey, here's just an email, go set up a billion-dollar fund." The company's commitment to sustainability has moved from being something that was a nice-to-have to something that is now part of our DNA and embedded as a core value.

I think back to a conversation I had years ago with some of our finance folks. I remember someone said to me, point blank, sustainability is not a top five issue for Microsoft. We've got privacy, customer security, a whole bunch of other issues—but sustainability isn't one of them. If you're expecting me or anyone else, to make this huge commitment, and give you all these resources, it's not going to happen, because it's just not embedded in the DNA of the company. Now, as I reflect on that two-month period where we put together these commitments, it's clear that sustainability is an absolute non-negotiable for the company.

And the thing that's really exciting to me is that it isn't just Microsoft, right? It's not just the tech industry—it's company after company, industry after industry. We're seeing commitments being made that we would have never seen five years ago. What we have done as an industry over the last 10 years is so amazing to think about; how much industries have moved. Things that would have been enormous lift a few years ago are now becoming afterthoughts. Of course, XYZ company or XYZ industry is going to commit to sustainable fuels and sustainable materials and thinking about packaging in different ways. Go down the list and you will find industry after industry and company after company making serious commitments. It's so exciting to see that as hard as the last 10 years were, everything we did were essential steps on this journey. In 2012 we said, "OK, we're going to buy some RECs and some carbon offsets." It wasn't that consequential, but it was essential for us to get to where we ultimately got.

And so one of the things that I really hope you'll hear is that, regardless of where you are, and where your company is, on your journey, it's fine. We don't all need to be at the same place at the same time. We need some companies that are willing to be out in front, to lead and innovate and break things along the way to figure out how to do it better. And then we need that learning to be shared. Forums like this are a great place to share: here's how we did it, here's what we learned, here's the mistakes that we made. Then we need others to be able to learn faster than we did. Part of sharing the journey is that, hopefully, as we go to our next goals of 100% zero carbon 100% of the time, we're going to make some mistakes along the way. But we're also going to be able to share those learnings with the industry so we will all be able to move faster to achieve those goals. You know, I don't expect a company today and says, "Hey, we want to be carbon neutral," that it's going to take 10 years to get to where we are now, because there's so much learning and so much positive peer pressure to go faster and do more. We're all going to be able to accelerate. The stuff we have to do over the next 10 years is just going to take a long time, it's going be hard, and it's not going to be overnight. But then companies can come in behind us and draft off the learnings that we're creating. That's what's so exciting.

Opening Keynote: Microsoft and the Art of the Possible

The progress this industry has made over the last 10 years, specifically on the renewable energy side, has just been phenomenal. And I think that we're going to see a tremendous amount of change over the next five years, as even more and more companies are able to jump onto that that bandwagon and catch those tailwinds. We're going to break some things along the way and then we're going to learn some new things. Hopefully, five years from now, we'll be able to continue that acceleration. So, it's an extraordinarily exciting time to be part of this industry. The title of this talk was "The Art of the Possible," and that's more than just about thinking about where we are trying to go. It's really about what is just that next step along the journey. That's what is important—what is the next thing we're going to do to move the ball forward? You don't have to do it all at once. We're not going to change everything in the industry overnight, but we are going to progressively. Day by day, moment by moment, decision by decision, commitment by commitment, we are going to transform this industry. It's just going to be [a question of] how quickly, right? And so, I think with the collective commitment in this room and with a collective commitment in our industry, I'm incredibly optimistic about what we're going to do in the next decade. I'm proud of what we've done over the last 10 years but there's so much more that we're going to be able to accomplish as an industry and I'm just thrilled and honored to get to be part of it.

"We don't all need to be at the same place at the same time. We need some companies that are willing to be out in front, to lead and innovate and break things along the way to figure out how to do it better."

—Brian Janous, General Manager, Energy and Renewables, Microsoft

Supplier Keynote: The Infinite Game— Managing Cost, Risk, and Carbon

Brad Christensen,
Vice President of Powerfolio Services, Calpine Energy

Supplier Keynote: The Infinite Game—Managing Cost, Risk, and Carbon

Brad Christensen adapts lessons learned from "Finite and Infinite Games" by James Carse to help companies think about integrating renewable energy and carbon abatement into their business strategies.

I want to talk about the five ways to buy renewable energy—and yes, there are only five, though there are a lot of nuances within those five categories. But each one of you is going to have a different thought, a different approach, a different constraint around whether or not any one of those five fits into the way that your company wants to run its energy programs and the way your company wants to manage its financial portfolios. Then, how do we take those five approaches and start creating strategies and how do we start implementing execution plans? It's taking these steps that inherently allows us to create impactful performance benchmarks so that we can, all along the way, understand how well we are doing relative to cost, relative to risk, and relative to carbon.

At Calpine, we help to integrate renewable energy and carbon abatement into the DNA of our clients. What we're really trying to create is sustainable and repeatable business processes that our customers can take to multiple functional disciplines within their organization, and to create consensus around the approaches and the objectives that are being set around these really, really critical initiatives.

Over COVID, like many of you, I had a chance to catch up on my reading. One of the books I read was by James Carse, a professor of theology at New York University in the 1970s. He came up with this idea that there are two types of games that people play. A finite game is made up of known players, known rules, known objectives. Think of football: score more points after four quarters and you win. Then there's the infinite game, where the objective is simply to remain in the game. There are changing players, changing rules, changing environments. Think about business—you don't win business. You don't win sustainability; this is something that always has to be happening. And so there is a mindset shift of thinking not in terms of a finite game, where the objective is to get a transaction completed, but an infinite game that we are always going to have to be thinking about and working on, staying aware of the changing landscapes that we're managing.

There are five critical factors to being able to effectively play an infinite game.

One: you have to have courageous leadership, somebody that says, go ahead and do it because we want to see if that makes a difference.

Two: you have to have trusting teams. This is really tough, because when you're talking about electricity to, let's say, the finance group, and you start talking about the variability and volatility of the capacity markets, you're going to get a blank look. Building trusting teams means focusing on communication, vocabulary, and building up those reports so everyone understands what it is that we're trying to achieve.

Three: you need to build a flexible playbook. This is absolutely critical because we are thinking about completing transactions that are typically going to be 10 to 15 years long. If you're not building flexibility into those commitments, you're going to have to live with that a long time, despite the fact that environments will radically shift during that 15-year period.

Four: you need to have a worthy rival. This is going to constantly help you to anchor back to the fifth factor.

Five: you need to have a noble cause. A noble cause isn't to make money or to turn a profit—it is something that will anchor you to a purpose. This means that you need to know why. Why are you doing this?

Supplier Keynote: The Infinite Game—Managing Cost, Risk, and Carbon

What is driving you, not from a financial perspective, not from a public relations perspective, but what is at the core of the DNA that is driving these initiatives?

For us, we started to think about what was broken and what was missing. In the market, relative to carbon management, what we consistently saw and what we continue to see is that, for some reason, the discipline of managing carbon was somehow broken off from the discipline of managing the financial portfolio associated with energy, when, in fact, these are part and parcel of the exact same things that we see our clients struggling with. How do we bridge the gap between our sustainability group and the responsibilities that I have as an energy manager to make sure we're doing the right things as it relates to the costs, the risks associated with our energy exposures? And so one of the things that we want to start to help people do is to integrate the disciplines of managing carbon with the disciplines of managing a financial portfolio. We need to effectively think about how we manage cost risk and carbon under the same umbrella, the same initiative. That leads us to create scalable, repeatable, sustainable business processes that help us build policies that define guardrails and constraints that the business requires. That helps us to build actionable strategies that allow us to address the needs of the goals of managing our cost, managing the variability of cost and price outcome, and then setting up meaningful and impactful performance metrics.

"You don't win sustainability; this is something that always has to be happening."

—Brad Christensen, Vice President of Powerfolio Services, Calpine Energy

Q&A: Creating Your Scope 3 Emissions Playbook

Greg Kandankulam,
Director, Sustainability,
NRG Energy

John Failla,
Founder
and CEO,
Smart Energy
Decisions

Q&A: Creating Your Scope 3 Emissions Playbook

FAILLA: Why do you think people are having such difficulty getting their arms around and managing the whole topic of Scope 3 emissions?

KANDANKULAM: The concept that your Scope 3 is someone else's Scope 1 makes you feel like this should be an easy process, right? But getting Scope 3 data can be opaque. To a certain extent a lot of people's supply spend within their top 90% can be with lots of small vendors who may not necessarily have the sustainability acumen or have not made public commitments. It's one thing to have a sustainability program, but it's another thing to have public commitments around, you know, net zero by 2050, or something along those lines. And so there are various methods and methodologies to try and address Scope 3 but there hasn't been one bulletproof way of doing it. There's a lot of specificity within industry, and some supply chains are international, so that provides a host of issues around data capture. In some cases, competitive advantage can be discerned from supply chain optimization, and some companies are trying to hold on to that as well. So, there are a lot of reasons why.

FAILLA: You get a chance to talk to lots of companies who are tackling this, and you see some do well at it, some not as well. What approaches do you see in common with those that are tackling their Scope 3 emissions effectively?

KANDANKULAM: There's a lot of estimation looking at lifecycle analyses. I think the GHG Protocol has about 60 third-party databases around products and energy use that are helping people figure this out. The real necessity is to have granular, direct data from your suppliers. Trying to create that, especially when you have hundreds of suppliers, has been difficult. Supplier codes of conduct is a great first step, leaning heavily on them with purchasing power that you can leverage. Walmart is a great example of that, where they're forcing their supply chain to give them the type of data that they need.

FAILLA: Walmart was early on in the process with their Project Gigaton. Getting that data from suppliers really requires a great deal of trust and requires the company to be committed to actually go after it. Greg, you mentioned that there are variations from industry to industry. What some of those distinctions?

KANDANKULAM: You'll have heavy Scope 1 and 2 users where that's the most material aspect of their business. That will be heavy power users in manufacturing and owned data centers all with 24/7 usage of lots of megawatts versus leased properties. That's one aspect of understanding what's material and what's not. But you also have services companies—far-flung international companies, with 50,000 or 60,000 people—who lease all their properties with triple net contracts. They're not direct purchasers of energy in many cases, so the preponderance of their emissions is Scope 3.

FAILLA: What's your point of view on approaches that the corporates in the room can take to try to encourage their supply chain partners to actually begin monitoring and measuring their Scope 1 emissions?

KANDANKULAM: The carrot-and-stick approach is great. You should be elevating the status of your partners publicly if they are working with you on Scope 3 capture. Shouting from the rooftops and from stages like this is a great way to enhance their brand and to keep that engagement going. The stick approach would be canceling supply contracts.

FAILLA: The use of carbon offsets is a source of great confusion for many in terms of where you can and can't use them. Where are we headed in terms of setting guidelines?

Q&A: Creating Your Scope 3 Emissions Playbook

KANDANKULAM: Five to seven years ago, I would have said that offsets and RECs were a gateway drug and not a strategy in and of itself. But now there's a lot of granularity in the offset market that can mesh nicely with your narrative around corporate performance of sustainability. If you are a large land user, like an agriculture company, maybe paying a premium for forestry-related services around offsets makes a lot of sense in terms of mitigating your impact on society. That's a great tool. We're looking at the bundling of products for new uses. For example, in natural gas, we're seeing kind of a hybridized renewable natural gas, where you're looking at conventional natural gas tied to an appropriate amount of carbon offsets that can help large corporations. There are baby steps on the renewable natural gas side, but RECs and offsets—especially offsets in this case—can help meet some of their needs.

For the most part, it's recently been more about SBTi (Science Based Target initiative) setting comment periods. The net zero energy standard is forthcoming, so there have been several comment periods. I'll give you a little bit of history with NRG. We were one of the first nine companies to actually have our reduction targets certified by SBTi. They traded on our logo quite a bit in those early days. But we've had ongoing conversations around how we help mitigate our own risks. As a power generator, that's part and parcel of our business. There's a lot of complexity in Scope 3, so I think that it's incumbent upon us to continue to engage with SBTi on their methodology. There is still a large body of work that needs to be done to come up with best practices to be able to address Scope 3, to be able to help customers in your landscape understand what to do within their own industry.

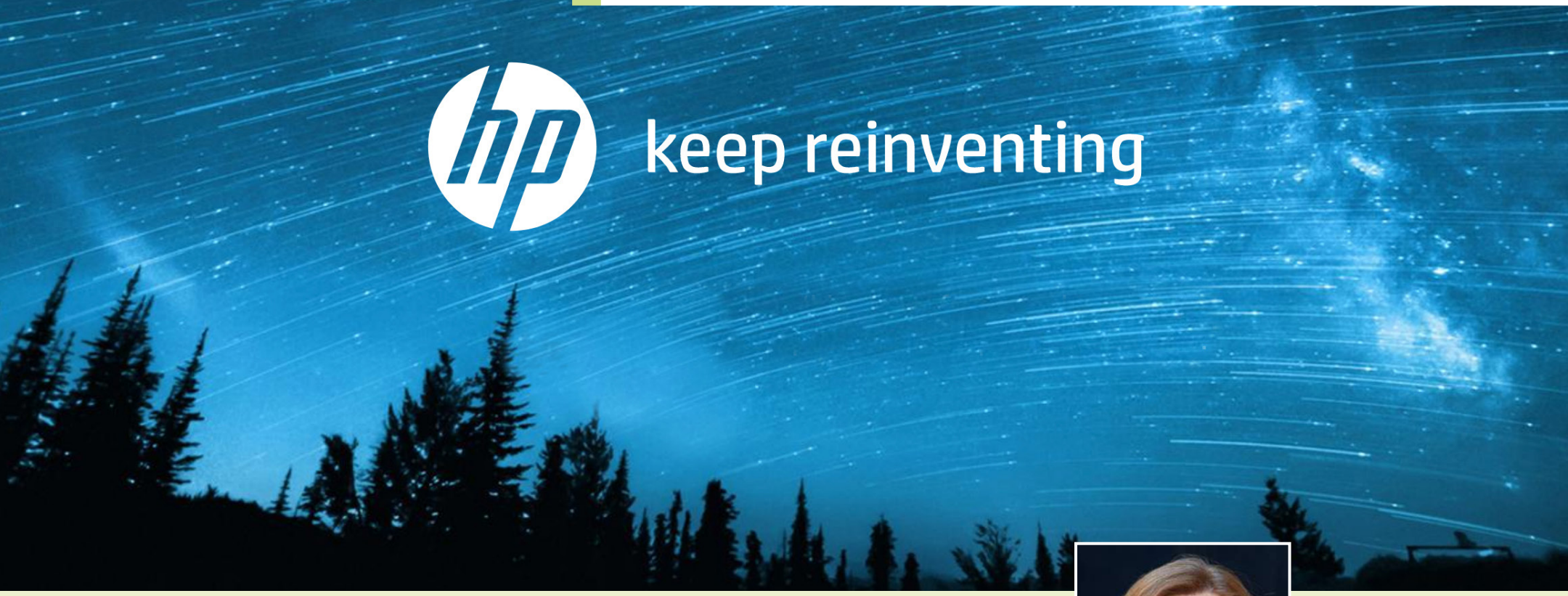
FAILLA: There was one Saturday morning, where I wanted to try to get a handle on what this SBTi is all about. I went to the website and started looking at the documents and guidance on how to set a target. I found it very, very confusing. I'm not sure how anyone can, you know, really figure it out on their own.

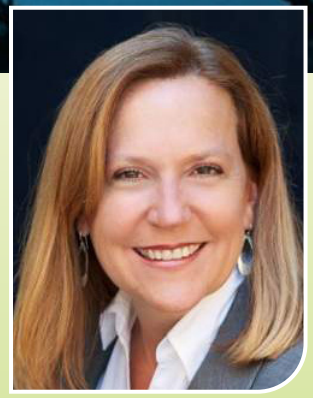
KANDANKULAM: The one thing that I would say about the SBTi is that they definitely need to grow with their levels of engagement and industry-specific guidance. For the most part, it's a lot of submission of paperwork versus having a consulting arm there. I know there were two comment periods that have closed out. Some customers have expressed a level of frustration. I think this is a group-think type of situation and it will require more engagement.

"The concept that your Scope 3 is someone else's Scope 1 makes you feel like this should be an easy process, right? But getting Scope 3 data can be opaque."

—Greg Kandankulam, Director, Sustainability, NRG Energy

Keynote: The Next Chapter— Reflections from an Industry Leader





Mary Curtis,
Global Head of Energy and Sustainability, HP

Keynote: The Next Chapter—Reflections from an Industry Leader

As her role at HP changes from renewable energy to leading the company's circularity practice for laptops and hardware programs, Mary Curtiss shares her perspective from the buyer side.

Three things that really drive me in this business are that I'm passionate, I'm ambitious, and I'm hopeful. And when I say passionate, my kids would probably say I'm a zealot. The reason is that I want to live my values. Sustainability is absolutely how I try and role model for my own kids and I don't keep it a secret. If I'm in a situation where I feel like I can help educate people on what they can do differently, I tend to be pretty vocal about it.

I'm ambitious and I like to set big goals. Incremental goals are not worth trying for. Finally, I'm hopeful. All of us are here is to make big changes. Thinking about COP26, a lot of us would have liked to see more progress, but we're hopeful. It's awesome to hear what a great year 2020 was even during COVID. Organizations are spending money on important things. That absolutely makes me hopeful.

Let's talk about the HP story. On Earth Day of 2021, we set our new 2030 vision to make HP the most sustainable and just technology company. From my perspective—and I might be a little biased—we're well on our way to achieving that. We were just announced for the third year in a row by Newsweek to be the most responsible company across all sectors. Thinking about what is getting us there, one factor is that we do set ambitious goals. A second is that we're very transparent about our data. We know we've got a long way to go but we feel that it's really important when we think about what's just. Third, is that we do think about climate change and climate action.

These are the three pillars that HP has established: planet, people, and community. Climate action is the pillar that my team in corporate real estate is focused on. We're driving towards a net zero, fully regenerative economy win while creating the industry's most sustainable portfolio of technology services and solutions. HP absolutely has a huge stake in human rights and digital equity. We think those three areas across all of our value chain are the most important areas for HP to make impacts.

In climate action, HP has three pillars that are measurable and material for us: carbon emissions, forests, and circularity. All three of these are inextricably linked. Under carbon emissions, we've created this stair step of where we are in 2021 to 2040, where our goal is to be net zero across our whole value chain, including Scope 1, 2, and 3. Our goal is to be carbon neutral in our operations and to get to 100% renewable electricity by 2025. The big challenge is that a lot of countries that we operate in—we're in over 60 countries around the world – don't have a renewable energy market.

I want to talk about five learnings from all of these projects that have changed my outlook on the renewable energy industry. First, from a buyer's perspective, all terms are negotiable. Suppliers may not want to talk about that, but we've had a lot of experience and a lot of opportunities to negotiate with vendors. It's a seller's market but from the buyer's side, be sure about the terms that you absolutely care about. For HP, they might be different than Microsoft or Google. Hold on to the terms that are super important to you and try not to let go.

Second, make sure you're looking at every stakeholder. Our employee stakeholder group was new and we hadn't evaluated them at the local level. But we also have investors—stakeholders that are pushing us like crazy—and customers that we talk to as often as we can. Then there are community stakeholders. We have a lot of projects right now where we need to consider the impact on the local community. Considering all the stakeholders is really important.

Third is metrics; make sure that you're evaluating all the important metrics. We all look at the business case, that's a no-brainer. But we also think about real estate strategy and ask how long we are going to be in this location and in this country. We're not a data center company so we can't come in and drop a huge energy load and have that kind of influence. Fourth is working with local government officials and utilities to understand what's coming up. That's super important.

Fifth is, I would say, just never give up. Never take no for an answer. When I first came to HP five years ago, we had a very large VPPA that we were ready to go to market with. The team had spent almost a year on it. Then the CFO just shut it down. And now we're coming back again with different leaders, but also a different strategy on risk. So I would end with that advice. I know these projects are long, they're hard, they're grueling, they're super complicated. Never give up. I love the quote from Greta Thunberg: "Hope doesn't come from words, hope only comes from actions." We all have to do everything we're doing and more to make the change that's needed. Think big, start small, and act now. We're all here to do that.

"I know these projects are long, they're hard, they're grueling, they're super complicated. Never give up."

—Mary Curtis, Global Head of Energy and Sustainability, HP

Panel: How to Get Your PPA Deal Done in a Seller's Market

Gia Clark,
Sr. Director,
Developer Services,
LevelTen Energy

Helen Brauner,
VP, Business
Development,
Lightsource bp

Debra Chanil,
Research and
Content Director,
Smart Energy
Decisions

Panel: How to Get Your PPA Deal Done in a Seller's Market

CHANIL: Let's start with the constraints facing developers today and the subsequent effect on buyers.

BRAUNER: I'm in my fifth year of this job and it feels like the toughest time so far. It's the "solar coaster" in terms of difficulty in development. We have challenges around panel access, part of all the supply chain issues that you're hearing about in every industry practically around the world. Then there are challenges with rules and regulations changing almost overnight in certain markets that can impact the economics of solar projects. We have challenges with labor, which again is a problem that a lot of industries are experiencing right now. We have challenges in interconnection within U.S. markets and that process is getting harder and taking longer. It can also be a lot more expensive to interconnect. There are also challenges in certain markets in the U.S. with pushback on solar. We were flying under the radar for a while, quietly doing our thing. Now that solar is growing, we're starting to experience some "NIMBY-ism."

CLARK: On the buyer side, it's already difficult for you to get those PPAs through the C-suite and to get your CFO on board. Volatility from the supply side is adding to that challenge, especially when you are trying to get projects up and running by a certain date so that you can claim your Renewable Energy Credits. For sure, it's creating volatility on the buyer side and some hesitation to know with confidence that the project is going to be delivered. It's this cascading conversation throughout the whole process, from the term sheet all the way to the actual final PPA signing. From the buyer side, there was always some risk, primarily from a financial standpoint, and now we're also looking at risk concerning when the project will actually be delivered.

And those are new nuances to the conversation that are challenging to work through.

CHANIL: What does a buyer need to do to get a PPA done?

CLARK: Developers, the producers of energy, are looking for buyer-side flexibility. They are asking, "How much risk can you wear with us through this process?" If we're trying to get something online by 2023, is there flexibility if it gets pushed by six months without major penalties to the developer, specifically when those risks are outside of their control—for example, due to supply chain issues or connection from the utility. There's also flexibility needed on PPA price increases due to market volatility. Be prepared to have conversations on pricing and contracts that allow adjustable levers. Contract flexibility that allows for the unknown is important to have in setting the context of what it takes to get a project done. This also means drawing buyers in a little earlier into the process. Historically, developers have worn the entire risk and have been able to manage that because it has previously been a buyer's market. But now, as volatility in the marketplace is increasing, there's an ask from the developer to share that risk with the buyer.

CHANIL: In our survey of buyer attendees, more than 80% are looking to get deals signed in the next six to 12 months, so there is a sense of urgency. In this seller's market, are these challenges transient or persistent? Should buyers wait or should they plow right ahead?

CLARK: When we think about the challenges that are influencing PPA pricing right now, infrastructure and interconnection are causing some of that price volatility. Those are massive improvements that need to be made to our grid. Those issues are here to stay—there are right-of-way

conversations that need to happen and huge upgrades needed for infrastructure in all regions, so that's a longer-term hit that will continue to keep pricing on the higher side. We are hopeful that we'll see some relief on supply chain challenges in the next 12 months. We will be getting more comfortable with how to manage risk as we adjust to impacts from COVID. Since 2020, we've seen a relatively significant increase in the offer prices on the LevelTen platform that is showing the impact of those changes coming through, as well as what will be needed in order to be able to make a project pencil and deliver it to you and absorb some of that risk in those PPA prices. That's a trend that will continue, so don't hesitate and think that you're going to get a deal in another six months. Price changes are going to be here for a while.

BRAUNER: We are already marketing projects with CODs in 2024 and 2025. In particular, I've seen some people wanting to hit certain targets by 2025—that's a common date. If you are looking at those goals, remember that these projects take a while. Negotiations take a while so you should act sooner rather than later. Building in that time is important to make sure you hit your timeframes.

"Historically, developers have worn the entire risk and have been able to manage that because it has previously been a buyer's market. But now, as volatility in the marketplace is increasing, there's an ask from the developer to share that risk with the buyer."

—Gia Clark, Sr. Director, Developer Services, LevelTen Energy

Going Global: Advancing 100% Renewable Energy in Global Organizations

Stephen Auton-Smith, Senior Managing Director, Ernst & Young Infrastructure Advisors, LLC

Debra Chanil, Research and Content Director, Smart Energy Decisions

Going Global: Advancing 100% Renewable Energy in Global Organizations

CHANIL: Tell us about EY's Renewable Energy Country Attractiveness Index.

AUTON-SMITH: This is something that we've been publishing for about 25 years on a quarterly basis. The report ranks the world's renewable energy markets on a range of criteria to provide, at its most basic level, a scoring system for renewable energy attractiveness by country. But it also provides a fairly straightforward commentary on what's changing, what are the headwinds, what's the evolving regulatory and economic landscape, and so on, covering more than just wind and solar—it also covers biofuels, hydrogen, all kinds of renewable energy technologies. When you look at that index, the U.S. is number one, which is fairly obvious on a global basis. But China is number two, and anyone who does anything in corporate renewables will know that it doesn't make any sense at all. There were clear limitations to how far that index could go for our corporate clients, which led to the next evolution, the PPA index. This ranks the same markets but through the lens of corporate procurements. As a result, while the U.S. is still right up there, China is not in the index. So that highlights the extreme disparity in context between what it means to be a developer and what it means to be a corporate offtaker.

CHANIL: What are the criteria used to develop the PPA Index?

AUTON-SMITH: There are four key issues. Precedent and market experience are important because a market may be attractive, but if there is no precedent or very little historic activity, then that will provide a significant barrier to efficient progress. There is forward-looking policy, which covers policies specifically targeted at the renewable energy industry. Then there's a market liquidity measure, which gauges how developed the market is from the point of view of the project pipeline, that is, renewable energy developers who operate in this market and can offer attractive projects. Finally, there is a wider bundled index, which reflects macroeconomics, and an analysis of ease of doing business analysis, which wraps up regulatory risk, political stability, corruption, tax environment, etc.

It's important to note that these criteria are multiplicative, so when we multiply them all together if any single component scores zero, then everything scores zero. At a basic level, it provides a straight-talking assessment of attractiveness. It is forward-looking and it does make certain judgments about what will happen in the short- to medium-term. At the same time, it's not based on wish fulfillment. It gives a good reality check of what you can do and where you can do it.

CHANIL: Let's talk specifically about the results. Sunny Spain was ranked at the top. What makes that country so attractive?

AUTON-SMITH: Spain's an interesting market. We've seen explosive growth in corporate PPAs in Spain in recent years. In terms of our view of the forthcoming pipeline, it is a pretty supportive regulatory and economic environment for renewables. What we've seen in terms of the levelized cost of solar, in particular versus grid, it's economically advantageous. What that's meant is that for a lot of European corporations, Spain has become the go-to place for a Pan European virtual power purchase agreement. You know, continental Europe, or at least western continental Europe, is considered one market from a greenhouse gas reduction perspective. Therefore, what European corporates are increasingly doing, particularly those with significantly distributed load—like we have in the U.S.—is trying to pick host countries for VPPAs. Spain, at least to date and in terms of forthcoming pipeline, is the preferred choice.

CHANIL: Number two is the U.S. What were some of the drivers?

AUTON-SMITH: There are headwinds, obviously, but the fundamental drivers to corporate procurement of power in the U.S. remain, in our view, very strong. The regulatory environment—though you may not feel this right now—is supportive, particularly compared to many other parts of the world. That is a function, to some extent, of the way in which virtual power purchase agreements have bridged the gap between regulated and deregulated markets. It's the way in which the regulatory support works in the U.S. because it's so tax-driven. It is monetizable by corporates or via developers, whereas in a lot of historic cases in European countries, it is through tariffs. In regulated markets like New York with the REC program, government effectively crowds out private sector participation, but for most of the U.S. that aren't that isn't so much the case.

We've taken a, hopefully, realistic view that the Build Back Better infrastructure legislation will pass substantially intact as far as renewables are concerned and therefore the renewal and expansion of tax incentives, particularly around batteries and hydrogen, will further drive down levelized cost of revenue and move the market forward. In some respects, the U.S., and this audience epitomizes this, has been a sleeping giant that is now waking in corporate America. Whilst it might be a slightly slower trend and a later transition than your European counterparts, the fundamental macro drivers are very positive.

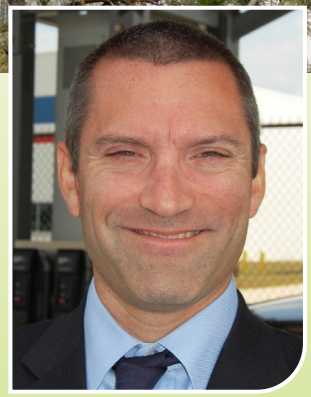
CHANIL: Let's move to Asia. China was number two on your main attractiveness index but doesn't even crack the top 30 on the PPA index. What's going on?

AUTON-SMITH: Not very much, is the answer. That's part of the problem. I know that Rob [Threlkeld of General Motors] and others have made progress in China with onsite and private wire-type projects. But the challenge is the incredibly heavy state presence in China in terms of state distribution companies and vertically integrated state utilities. Also, the labyrinth regulatory environment, which can vary from province to province, makes it extremely difficult to make any meaningful progress. We've been through the mill a few times with clients with significant operations in China who aren't able to necessarily have a rooftop or a private wire arrangement. Each time, where we felt we were making progress in discussions and negotiations with state entities, we've ended up basically just purchasing a certificate at the end. Trying to create any kind of additionality or meaningful connection to the underlying renewable asset is extremely difficult. We're not the universal arbiter of experience in China by any means, but in talking to other clients and advisors, a lot of this just boils down to glorified certificate purchasing and doesn't add any material value beyond what you could just do by going to a broker in China and buying certificates directly.

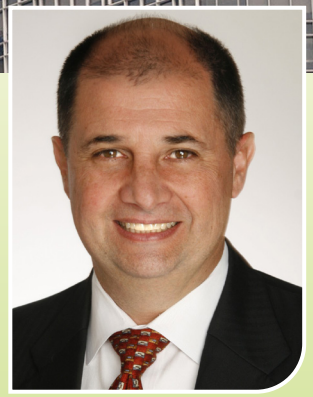
"There are headwinds, obviously, but the fundamental drivers to corporate procurement of power in the U.S. remain, in our view, very strong."

—Stephen Auton-Smith, Senior Managing Director, Ernst & Young Infrastructure Advisors, LLC

Glosing Keynote: The Electrification of General Motors



Rob Threlkeld,
Global Manager of Sustainable Energy, Supply and Reliability, General Motors



John Failla,
Founder and Editorial Director, Smart Energy Decisions

Glosing Keynote: The Electrification of General Motors

FAILLA: Vehicle fleet electrification is going to fundamentally transform the fleet management industry, bringing new approaches and business models. GM announced its BrightDrop business for fleet management. Tell us more about how it works and where it's headed.

THRELKELD: COVID obviously led more people to order packages from the convenience of home. Think about the number of vehicles that are part of the logistics of getting products from where you made the click to purchase an item to deliver to your house. BrightDrop is brand new for General Motors and provides the software and the services to decarbonize delivery from the first mile through the last. We're offering a full-size electric commercial vehicle called the EV600, to serve FedEx and other delivery outlets, as well as the EV410 midsize delivery van, a bit smaller to deliver on that last mile. Our first dealership is in Fontana, California.

FAILLA: It's interesting that you've gone from just selling vehicles to selling vehicle software and services. It sounds like fleet customers can just buy the vehicles themselves or purchase delivery as a service from BrightDrop with multiple options.

THRELKELD: Yes, there is a total range of options. Whether the company chooses to own EVs or not, we're there to provide a one-stop-shop solution. We track data through driver phones to help companies understand their changing habits. For example, you can tie into utility time-of-use rates to set your EV to charge when electricity is the cheapest to help manage costs. It's more realistic than going to the gas station at 1 a.m. to get gas for $2.50 a gallon versus $3.50 at 5 p.m. Most of us probably don't pay attention to our electric bills, but as we create vehicles that ultimately are affordable to everyone, we want to make sure that they understand that there are different ways to control the costs associated with charging their electric vehicle. It's about balancing fleet charging and ways to help decarbonize the grid with renewable energy as well.

FAILLA: Yes, when you see gas stations around here at $5 or more per gallon, the thought of being able to fuel up at night for a lower price is appealing! When we first met, you were kind of the "renewable energy guy" at GM. The company is now in this dramatic state of transformation. My impression is that you still have a seat at the table with a lot more happening at the company than just renewable energy procurement. How has your role changed and evolved?

THRELKELD: You're absolutely right. When we met seven or eight years ago, I was leading our renewable energy efforts, focusing on scaling power purchase agreements. Since then, we've accelerated our goals to be 100% renewable in the U.S. by 2025, and globally by 2035. I remember back in 2016 when we set our RE100 goal. We questioned if we should put a date on our target and I argued that a date was necessary so that we could march towards it. We have targets for as far ahead as 2050. I think back to the first time I went to leadership for approval and got shot out the door for putting all my eggs in one renewable energy basket. They asked me to come back with a better strategy and that's really where our four-pillar strategy came into effect. We've always been doing energy efficiency projects in our facilities and sourcing renewables is just another avenue of doing it.

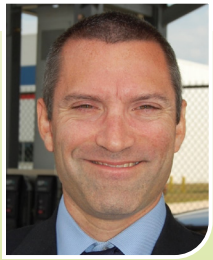
Since then, we've also increased focus on energy storage to address grid intermittency and even policy to really move the markets. We've worked with local, state, and federal policymakers to discuss how to encourage utilities to start to align with models like green tariffs for customers versus being at a price disadvantage. All of that has come to fruition now as we

Glosing Keynote: The Electrification of General Motors

formally announce some of the great opportunities we offer customers in our products, technology, and services. We want to continue to learn how we can leverage our manufacturing skills to help pilot at a scale larger than a test bench and R&D lab to deliver more software and technology solutions in the future for our customers.

FAILLA: It's funny that Brian Janous opened our event with a story about getting kicked out of an office after a renewables presentation and now you are closing our event with one! shared stories about getting kicked out of an office after a renewable energy presentation. He responded by creating a new approach, just as you responded with these four pillars. I guess the message is, if you meet up with an obstacle, keep your chin up and reposition your plans.

THRELKELD: Exactly, repositioning was key. You know, our CFO was in the room that first time and his response wasn't "you can't come back." It was "come back with something that makes sense for us as a company." It was good to hear those challenging questions because now we are socializing our broader efforts and connecting the dots of what we're doing within the industry. We are able to connect all the different moving variables, so we can mitigate risk. As we look at the technology side of the business, it's not just one technology solution that's going to solve the issues of climate change, it's a multitude of solutions. Providing that avenue for those in finance and accounting and treasury, those who don't deal with energy, allows them to think about the transformation of the company going. It allows them to get smarter and ask some challenging questions so that we get smarter as a company and as an industry.



"I think back to the first time I went to leadership for approval and got shot out the door for putting all my eggs in one renewable energy basket. They asked me to come back with a better strategy and that's really where our four-pillar strategy came into effect."

—Rob Threlkeld, Global Manager of Sustainable Energy, Supply and Reliability, General Motors


SMART ENERGY DECISIONS
RENEWABLE ENERGY FORUM
Save the Date!
December 6-8, 2022
Huntington Beach, California
Collaborating for a Net Zero Future

SMART ENERGY DECISIONS

YOUR SUCCESS IS OUR BUSINESS

MANAGER OF CUSTOMER SOLUTIONS
Tim Gaghan
(267) 212-4983
tim@smartenergydecisions.com

DIRECTOR OF RESEARCH & CONTENT
Debra Chanil
debra@smartenergydecisions.com

www.SmartEnergyDecisions.com